

REMARKS

This is intended as a full and complete response to the Office Action dated December 28, 2007, having a shortened statutory period for response set to expire on March 28, 2008. Please reconsider the claims pending in the application for reasons discussed below.

CLAIM OBJECTION

Claim 54 is objected to because of the following informalities. In response, the Applicants have amended the claim dependency of claim 54 to claim 53. Accordingly, the Applicants submit that claim 54 is now in allowable form and respectfully request the objection withdrawn.

CLAIM REJECTIONS

35 U.S.C. §103 Claims 1, 3-4, 6-7, 17-18, 20 and 23-24

Claims 1, 3-4, 6-7, 17-18, 20 and 23-24 stand rejected under 35 U.S.C. §103 as being unpatentable over *Toprac* (U.S. Patent No. 6,379,980) in view of *Payne* (U.S. Patent No. 5,329,381), *Knoot* (U.S. Patent No. 6,130,415) and *Yonezawa et al* (U.S. Publ. No. 2003/0222231) or *Shoham et al* (U.S. Publ. No. 2004/0028267) or *Egermeier et al* (U.S. Publ. No. 2002/0006677) as evidenced by *Wilby* (U.S. Publ. No. 2003/0141572). In response, the Applicants have amended claims 1 and 18 to more clearly recite certain aspects of the invention.

Independent claims 1 and 18 recite elements not taught or suggested by the combination of *Toprac*, *Payne*, *Knoot*, *Yonezawa* or *Shoham* or *Egermeier*, as evidenced by *Wilby*. *Toprac* teaches measuring a thickness of a process layer disposed on a substrate before an etching process. A removal rate may be determined based on the measured thickness of the process layer and an endpoint time. The Examiner asserts that *Toprac* discloses using pre-etch measurement for the purpose of determining parameters for adjusting or controlling an etch recipe, and it is obvious that during a pre-etch measurement of a pattern of poor quality its measurement will indicate so. It would be commonsense not to allow further processing if next stage would not yield acceptable quality. The Applicants respectfully disagree.

A thickness pre-measurement of a to-be-etched film, as taught by *Toprac*, is used to calculate an etch rate of a targeted film. Once the pre-measurement data is obtained and an etch rate is calculated, an etching endpoint may be monitored or the process adjusted to achieve a removal rate closer to the removal rate. However, *Toprac*, does not teach to using pre-etch analyzing the pre-etch measurement information to determine that a patterning is of a sufficient quality to allow for etching of the substrate and to determine process parameters to an etch process, or that the pre-etch measurements are critical dimension measurements. Accordingly, the pre-measurements of *Toprac* only provides information of thickness which may be used for rate calculation or in-situ process adjustment. Therefore, *Toprac* does not teach or suggest using pre-etch measurements for setting etch parameters prior to etching. Moreover, the pre-measurement as taught by *Toprac* is not utilized in combination with an etch process monitoring to determine critical dimension of structures formed in a substrate.

Payne teaches using an automatic engraving system to scan an image of a photograph to provide a masterized gray scale data base of the image. The Examiner asserts that art may be outside applicant's field of endeavor and still be analogous if both fields share the same common problem. The Examiner further asserts that measuring the pattern is similar to scanning an image as in *Payne*. The Applicants respectfully disagree.

Payne teaches scanning an image, such as a photograph, and using an appropriate algorithm, such as a photo processing software, programmed in a computer to process and reshape the scanned image. The algorithm programmed computer promotes resolution of the scanned image to use in an engraving system. The scanned image under computer algorithm processing is a plane surface, a two-dimensional object. After sequences of mathematical calculations, the scanned image is corrected, resized, resampled, and digitally processed to produce a photograph with desired brightness, contrast, and constant pixel unit across the substrate. Accordingly, the algorithm programmed computer, as taught by *Payne*, is used to process and reshape a two-dimensional planar object. The *Payne* process is not used to pre-measure thickness or critical dimensions – but for reshaping for engraving. Moreover, the *Payne*

process is not used to determine process parameters of an etch process. The photo reshaping process, as taught by *Payne*, cannot be used to modify a process for monitoring an etch process to determine critical dimension of structures formed in a substrate.

Furthermore, the photo reshaping process, as taught by *Payne*, is not used to solve the same problem as the problem described in *Toprac*, contrary to the Examiner's assertion. *Payne* is utilized to improve resolution of a scanned image of a two dimensional object, while *Toprac* teaches pre-measuring a thickness of a film to calculate an etching rate for endpoint determination. The use of the photo reshaping improves image resolution, which is an issue not encountered by *Toprac*.

Knoot teaches a low temperature control of a rapid thermal process. In particular, the Examiner asserts that *Knoot* discloses "a modulation frequency of 10 Hz." The Applicants respectfully submit that frequency of less than 20 Hertz as taught by *Knoot* is used for a temperature measurement system in a rapid thermal process chamber. Accordingly, there is no reasonable expectation of success for utilizing a temperature sampling frequency of less than 20 Hertz of *Knoot* to modify the two-dimensional image correction process performed in an algorithm programmed computer of *Payne* and the thickness pre-measurement method of *Toprac* in a manner that would yield applying an outlier filter to remove outliers in a pre-etch critical dimension measurement information, analyzing the pre-etch critical dimension measurement information to determine process parameters to an etch process and using the pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor the etch process endpoint, wherein the etch process monitoring comprises collecting a portion of the radiation reflected from the substrate to determine critical dimension of the structures formed in the substrate, as recited by claim 1, or applying an outlier filter to remove outliers in a pre-etch measurement information, analyzing the pre-etch measurement information to determine process parameters to an etch process, trimming the mask using the etch process, wherein the pre-etch measurement information in combination with etch process monitoring are used to in-situ monitor the trimming the mask, as recited by claim 18.

Yonezawa teaches an apparatus suitable for taking post-etching measurements. *Shoham* teaches using an endpoint detector used in a CMP system. *Egermeier* teaches using a detector to detect contaminant range on a substrate. *Wilby* is cited as evidencing use of ellipsometry or reflectometry. Thus, *Yonezawa*, *Shoham*, *Egermeier*, and *Wilby*, does not provide a teaching or suggestion to the combination of *Knoot*, *Payne* and *Toprac* as discussed above that would yield using an outlier filter to filter a pre-measurement critical dimension data, utilizing the pre-measurement critical dimension data when in-situ monitoring an etch process, or using the pre-etch critical dimension measurement in combination with an etch process monitoring to determine critical dimension of structures formed in a substrate.

Furthermore, there is no teaching or suggestion from *Yonezawa*, *Shoham*, *Egermeier*, or *Wilby*, that would suggest one of ordinary skill in the art to modify *Toprac*, *Payne*, or *Knoot* in a manner that would yield applying an outlier filter to remove outliers in a pre-etch measurement information, analyzing the pre-etch measurement information to determine process parameters to an etch process and using the pre-etch measurement information in combination with etch process monitoring are used to in-situ monitor the etch process endpoint, wherein the etch process monitoring comprises collecting a portion of the radiation reflected from the substrate to determine critical dimension of the structures formed in the substrate, as recited by claim 1, and applying an outlier filter to remove outliers in a pre-etch measurement information, analyzing the pre-etch measurement information to determine process parameters to an etch process, trimming the mask using the etch process, wherein the pre-etch measurement information in combination with etch process monitoring are used to in-situ monitor the trimming the mask, as recited by claim 18. As such, a *prima facie* case of obviousness has not been established as the references fail to teach each claimed element.

Thus, the Applicants submit that independent claims 1 and 18, and all claims depending therefrom, are patentable over the combination of *Toprac*, *Payne*, *Knoot*, *Yonezawa* or *Shoham* or *Egermeier*, as evidenced by *Wilby*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

35 U.S.C. §103 Claims 1, 3-4, 6-9, 11-13, 15, 17-18, 20, 23-26, 28-30 and 32

Claims 1, 3-4, 6-9, 11-13, 15, 17-18, 20, 23-26, 28-30 and 32 stand rejected under 35 U.S.C. §103 as being unpatentable over *Klippert II* (U.S. Patent No. 6,136,712) in view of *Payne*, *Knoot* and *Yonezawa* or *Shoham* or *Egermeier*. In response, the Applicants have amended claims 1 and 18 to more clearly recite certain aspects of the invention.

Independent claims 1 and 18 recite elements not taught or suggested by the combination of *Klippert II*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier*. *Klippert II* teaches measuring or estimating an etching rate of an etch process to better control the depth formed or etched in a layer disposed on a substrate during an etching process. However, *Klippert II* does not teach or suggest using an outlier filter to filter a pre-etch critical dimension measurement data, utilizing the pre-etch critical dimension measurements to in-situ monitor an etch process, or using the pre-etch critical dimension measurement in combination with an etch process monitoring to determine critical dimension of structures formed in a substrate.

As discussed above, the teachings of *Payne* and *Knoot* are not in the field of Applicants endeavor and not utilized to solve the same problem as discussed in the present application, nor does the record support utilization of the teachings of *Payne* and *Knoot* to obtain predictable results in the claimed subject matter. *Yonezawa* teaches an apparatus suitable for post-etching measurement. *Shoham* teaches using an endpoint detector used in a CMP system. *Egermeier* teaches using a detector to detect contaminant range on a substrate. Thus, there is no suggestion from the teachings of *Payne*, *Knoot*, *Yonezawa*, *Shoham*, *Egermeier* to modify the teaching of *Klippert II* in a manner that would not yield a method that includes applying an outlier filter to remove outliers in a pre-etch critical dimension measurement information, analyzing the pre-etch critical dimension measurement information to determine process parameters to an etch process and using the pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor the etch process endpoint, wherein the etch process monitoring comprises collecting a portion of the radiation reflected from the substrate to determine critical dimension of the structures formed in the substrate, as recited by claim 1, and applying

an outlier filter to remove outliers in a pre-etch critical dimension measurement information, analyzing the pre-etch critical dimension measurement information to determine process parameters to an etch process, trimming the mask using the etch process, wherein the pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor the trimming the mask, as recited by claim 18. As such, a *prima facie* case of obviousness has not been established as the references fail to teach each claimed element.

Thus, the Applicants submit that independent claims 1 and 18, and all claims depending therefrom, are patentable over the combination of *Klippert II*, *Payne*, *Knoot*, and *Yonezawa* or *Shoham* or *Egermeier*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

35 U.S.C. §103 Claims 1, 3-4, 6-9, 11-13, 15, 17-18, 20, 23-26, 28-30 and 32

Claims 1, 3-4, 6-9, 11-13, 15, 17-18, 20, 23-26, 28-30 and 32 stand rejected under 35 U.S.C. §103 as being unpatentable over *Petrucci* (WO 01/24254) in view of *Payne*, *Knoot*, and *Yonezawa* or *Shoham* or *Egermeier*. The Applicants disagree.

Independent claims 1 and 18 recite elements not taught or suggested by the combination of *Petrucci*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier*. *Petrucci* teaches using an endpoint algorithm to detect an endpoint of an etching process. However, *Petrucci* does not teach or suggest using an outlier filter to filter a pre-etch critical dimension measurement data, utilizing the pre-etch critical dimension measurement to in-situ monitor an etch process, or using the pre-etch critical dimension measurement in combination with an etch process monitoring to determine critical dimension of structures formed in a substrate.

As discussed above, the teachings of *Payne* and *Knoot* are not in the field of Applicants endeavor and not utilized to solve the same problem as discussed in the present application, nor does the record support utilization of the teachings of *Payne* and *Knoot* to obtain predictable results. *Yonezawa* teaches an apparatus suitable for post-etching measurement. *Shoham* teaches using an endpoint detector used in a CMP system. *Egermeier* teaches using a detector to detect contaminant range on a substrate. Thus, there is no suggestion from the teachings of *Payne*, *Knoot*, *Yonezawa*,

Shoham, Egermeier to modify the teachings of *Petrucchi* in a manner that would yield a method of applying an outlier filter to remove outliers in a pre-etch critical dimension measurement information, analyzing the pre-etch critical dimension measurement information to determine process parameters to an etch process and using the pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor the etch process endpoint, wherein the etch process monitoring comprises collecting a portion of the radiation reflected from the substrate to determine critical dimension of the structures formed in the substrate, as recited by claim 1, and applying an outlier filter to remove outliers in a pre-etch critical dimension measurement information, analyzing the pre-etch critical dimension measurement information to determine process parameters to an etch process, trimming the mask using the etch process, wherein the pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor the trimming the mask, as recited by claim 18. As such, a *prima facie* case of obviousness has not been established as the references fail to teach each claimed element.

Thus, the Applicants submit that independent claims 1 and 18, and all claims depending therefrom, are patentable over the combination of *Petrucchi*, *Payne*, *Knoot*, and *Yonezawa* or *Shoham* or *Egermeier*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

35 U.S.C. §103 Claims 1, 3-4, 6-9, 11-13, 15, 17-18, 20, 23-26, 28-30 and 32

Claims 1, 3-4, 6-9, 11-13, 15, 17-18, 20, 23-26, 28-30 and 32 stand rejected under 35 U.S.C. §103 as being unpatentable over *Grimbergen* (U.S. Patent No. 6,390,019) in view of *Payne*, *Knoot*, and *Yonezawa* or *Shoham* or *Egermeier*. The Applicants disagree.

Independent claims 1 and 18 recite elements not taught or suggested by the combination of *Grimbergen*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier*. *Grimbergen* teaches using a process monitoring system mounted on top of a processing chamber to monitor a process. However, *Grimbergen* does not teach or suggest using an outlier filter to filter a pre-measurement data, utilizing the pre-etch critical dimension measurement to in-situ monitor an etch process, or using the pre-etch

critical dimension measurements in combination with an etch process monitoring to determine critical dimension of structures formed in a substrate.

As discussed above, the teachings of *Payne* and *Knoot* are not in the field of Applicants endeavor and not utilized to solve the same problem as discussed in the present application, nor does the record support utilization of the teachings of *Payne* and *Knoot* to obtain predictable results. *Yonezawa* teaches an apparatus suitable for obtaining post-etching measurements. *Shoham* teaches using an endpoint detector used in a CMP system. *Egermeier* teaches using a detector to detect contaminant range on a substrate. Thus, there is no suggestion from the teachings of *Payne*, *Knoot*, *Yonezawa*, *Shoham*, *Egermeier* to modify the teachings of *Grimbergen* in a manner that would yield applying an outlier filter to remove outliers in a pre-etch critical dimension measurement information, analyzing the pre-etch critical dimension measurement information to determine process parameters to an etch process and using the pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor the etch process endpoint, wherein the etch process monitoring comprises collecting a portion of the radiation reflected from the substrate to determine critical dimension of the structures formed in the substrate, as recited by claim 1, and applying an outlier filter to remove outliers in a pre-etch critical dimension measurement information, analyzing the pre-etch critical dimension measurement information to determine process parameters to an etch process, trimming the mask using the etch process, wherein the pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor the trimming the mask, as recited by claim 18. As such, a *prima facie* case of obviousness has not been established as the references fail to teach each claimed element.

Thus, the Applicants submit that independent claims 1 and 18, and all claims depending therefrom, are patentable over the combination of *Grimbergen*, *Payne*, *Knoot*, and *Yonezawa* or *Shoham* or *Egermeier*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

35 U.S.C. §103 Claims 10, 20 and 27

Claims 10, 20 and 27 stand rejected under 35 U.S.C. §103 as being unpatentable over *Toprac* in view of *Payne*, *Knoot*, and *Yonezawa* or *Shoham* or *Egermeier* as applied to claims 1, 3-4, 6-7, 17-18, 20 and 23-24, and further in view of *Bin Yu* (U.S. Patent No. 6,390,019). In response, the Applicants have amended claims 1 and 18 to more clearly recite certain aspects of the invention.

Independent claims 1 and 18 recite elements not taught or suggested by the combination of *Toprac*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier* further in view of *Bin Yu*. The patentability of claims 1 and 18 over *Toprac*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier* has been discussed above. *Bin Yu* is cited for its teaching of using a mask for etching that two sides and top of a feature is trimmed by substantially the same trim length. However, there is no teaching or suggestion from *Bin Yu* that would suggest to one of ordinary skill in the art to modify the teaching of *Toprac*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier* in a manner that would yield applying an outlier filter to remove outliers in a pre-etch critical dimension measurement information, analyzing the pre-etch critical dimension measurement information to determine process parameters to an etch process and using the pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor the etch process endpoint, wherein the etch process monitoring comprises collecting a portion of the radiation reflected from the substrate to determine critical dimension of the structures formed in the substrate, as recited by claim 1, or applying an outlier filter to remove outliers in pre-etch critical dimension measurement information, analyzing the pre-etch critical dimension measurement information to determine process parameters to an etch process, trimming the mask using the etch process, wherein the pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor the trimming the mask, as recited by claim 18.

Thus, the Applicants submit that independent claims 1 and 18, and all claims depending therefrom, are patentable over the combination of *Toprac*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier* further in view of *Bin Yu*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

35 U.S.C. §103 Claims 16 and 33

Claims 16 and 33 stand rejected under 35 U.S.C. §103 as being unpatentable over *Grimbergen* in view of *Payne*, *Knoot*, and *Yonezawa* or *Shoham* or *Egermeier* as applied to claims 1, 3-4, 6-9, 11-13, 15, 17-20, 23-26, 28-30 and 32, and further in view of *Grimbergen* '924 (U.S. Patent No. 6,406,924). In response, the Applicants have amended claims 1 and 18 to more clearly recite certain aspects of the invention.

Independent claims 1 and 18 recite elements not taught or suggested by the combination of *Grimbergen*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier* further in view of *Grimbergen* '924. The patentability of claims 1 and 18 over *Grimbergen*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier* has been discussed above. *Grimbergen* '924 is cited for its teaching of detecting an interferometric signal shift in an endpoint detection system to monitor an etched structure formed in the substrate during an etching process. However, there is no teaching or suggestion from *Grimbergen* '924 that would suggest to one of ordinary skill in the art to modify the teaching of *Grimbergen*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier* in a manner that would yield applying an outlier filter to remove outliers in a pre-etch critical dimension measurement information, analyzing the pre-etch critical dimension measurement information to determine process parameters to an etch process and using the pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor the etch process endpoint, wherein the etch process monitoring comprises collecting a portion of the radiation reflected from the substrate to determine critical dimension of the structures formed in the substrate, as recited by claim 1, or applying an outlier filter to remove outliers in pre-etch critical dimension measurement information, analyzing the pre-etch critical dimension measurement information to determine process parameters to an etch process, trimming the mask using the etch process, wherein the pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor the trimming the mask, as recited by claim 18.

Thus, the Applicants submit that independent claims 1 and 18, and all claims depending therefrom, are patentable over the combination of *Grimbergen*, *Payne*, *Knoot*, and *Yonezawa* or *Shoham* or *Egermeier* and further in view of *Grimbergen* '924. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

35 U.S.C. §103 Claim 21

Claim 21 stands rejected under 35 U.S.C. §103 as being unpatentable over *Toprac* in view of *Payne*, *Knoot*, and *Yonezawa* or *Shoham* or *Egermeier* as applied to claims 1, 3-4, 6-7, 17-18, 20 and 23-24 and further in view of *Cha* (U.S. Patent No. 6,319,767). In response, the Applicants have amended claim 18 to more clearly recite certain aspects of the invention.

Independent claim 18 recites elements not taught or suggested by the combination of *Toprac*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier* further in view of *Cha*. The patentability of claim 18 over *Toprac*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier* has been discussed above. *Cha* is cited for its teaching of reducing a photoresist mask by ashing. However, there is no teaching or suggestion from *Cha* that would suggest to one of ordinary skill in the art to modify the teaching of *Toprac*, *Payne*, *Knoot*, and *Yonezawa*, *Shoham*, or *Egermeier* in a manner that would yield applying an outlier filter to remove outliers in a pre-etch critical dimension measurement information, analyzing the pre-etch critical dimension measurement information to determine process parameters to an etch process, trimming the mask using the etch process, wherein the pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor the trimming the mask, as recited by claim 18. As such, a *prima facie* case of obviousness has not been established as the references fail to teach each claimed element.

Thus, the Applicants submit that claim 21 that depends from claim 18 is patentable over the combination of *Toprac*, *Payne*, *Knoot*, and *Yonezawa* or *Shoham* or *Egermeier* and further in view of *Cha*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claim allowed.

35 U.S.C. §103 Claims 50-59

Claims 50-59 stand rejected under 35 U.S.C. §103 as being unpatentable over *Grimbergen* in view of *Payne*, *Knoot*, and further in view of *Cha* and *Bin Yu*. In response, the Applicants have amended claim 50 to more clearly recite certain aspects of the invention.

Independent claim 50 recites elements not taught or suggested by the combination of *Grimbergen*, *Payne*, *Knoot*, and further in view of *Cha* and *Bin Yu*. As discussed above, *Grimbergen* teaches using a process monitoring system mounted on top of a processing chamber to monitor a process. The teachings of *Payne* and *Knoot* are not in the field of Applicants endeavor. *Cha* is cited for reducing a photoresist mask by ashing. *Bin Yu* is cited for its teaching of using a mask for etching that two sides and top of a feature is trimmed by substantially the same trim length. Neither *Grimbergen*, *Payne*, *Knoot*, *Cha* nor *Bin Yu*, alone or in combination, teaches or suggests determining process parameters of an etch process, and trimming a mask using the etch process, wherein a filtered pre-etch measurement information in combination with etch process monitoring are used to in-situ monitor trim process, as recited by claim 50. Nor does *Grimbergen*, *Payne*, *Knoot*, *Cha* nor *Bin Yu*, alone or in combination, teaches or provides a suggestion to modify their teachings in a manner that would yield determining process parameters of an etch process, and trimming a mask using the etch process, wherein a filtered pre-etch measurement information in combination with etch process monitoring are used to in-situ monitor trim process, as recited by claim 50. As such, a *prima facie* case of obviousness has not been established as the references fail to teach each claimed element.

Thus, the Applicants submit that independent claim 50, and claims 51-59 depending therefrom, are patentable over the combination of *Grimbergen* in view of *Payne*, *Knoot*, and further in view of *Cha* and *Bin Yu*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

35 U.S.C. §103 Claims 50-59

Claims 50-59 stand rejected under 35 U.S.C. §103 as being unpatentable over *Toprac* or *Klippert II* or *Petrucci* in view of *Payne*, *Knoot*, and further in view of *Cha* and *Bin Yu*. The Applicants disagree.

Independent claim 50 recites elements not taught or suggested by the combination of *Toprac* or *Klippert II* or *Petrucci* in view of *Payne*, *Knoot*, and further in view of *Cha* and *Bin Yu*. As discussed above, *Toprac* teaches measuring a thickness of a process layer disposed on a substrate before an etching process. *Klippert II* teaches measuring or estimating an etching rate of an etch process to better control the depth formed or etched in a layer disposed on a substrate during an etching process. *Petrucci* teaches using an endpoint algorithm to detect an endpoint of an etching process. The teachings of *Payne* and *Knoot* are not in the field of Applicants endeavor. *Cha* is cited for ashing a photoresist mask. *Bin Yu* is cited for its teaching of using a mask for etching that two sides and top of a feature is trimmed by substantially the same trim length.

Neither *Toprac*, *Klippert II*, *Petrucci*, *Payne*, *Knoot*, *Cha*, *Bin Yu*, alone or in combination, teaches or suggests determining process parameters of an etch process, and trimming a mask using the etch process, wherein a filtered pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor trim process, as recited by claim 50. Nor does *Toprac*, *Klippert II*, *Petrucci*, *Payne*, *Knoot*, *Cha*, nor *Bin Yu*, alone or in combination, teach or suggest determining process parameters of an etch process, and trimming a mask using the etch process, wherein a filtered pre-etch critical dimension measurement information in combination with etch process monitoring are used to in-situ monitor trim process, as recited by claim 50. As such, a *prima facie* case of obviousness has not been established as the references fail to teach each claimed element.

Thus, the Applicants submit that independent claim 50, and claims 51-59 depending therefrom, are patentable over the combination of *Toprac* or *Klippert II* or *Petrucci* in view of *Payne*, *Knoot*, and further in view of *Cha* and *Bin Yu*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

CONCLUSION

Thus, at least for the reasons set forth above, the Applicants submit that all claims now pending are in condition for allowance. Accordingly, both reconsideration of this application and swift passage to issue are earnestly solicited.

If the Examiner believes that any unresolved issues still exist, it is requested that the Examiner telephone Keith Taboada at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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Date



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